

1 IN THE DRAWINGS

2 New drawings will be submitted upon receiving an allowable claim if appropriate.

3 IN THE CLAIMS

4 Please cancel claims 1-131. New Claims 132-156 are added.

5 CLAIMS

6 1. Cancelled.

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| 23 | (New Claim) 132. A process for treating wood having wood cellulose having a plurality of | |

1 hydroxyl groups comprising the steps of:

2 providing a solution comprised of:

3 a non-water-based hydrophilic organic solvent;

4 a solute compound having a plurality of functional groups wherein each of

5 which functional group includes;

6 an atom selected from the group consisting of tetravalent atoms, wherein said

7 atom is bonded to a halogen atom or a functional group selected from the group consisting of a

8 hydroxyl group, alkoxy group, phenoxy group, benzyloxy group, an aryloxy group having a

9 polycyclic aromatic ring, and combinations thereof; and

10 at least one acid catalyst;

11 applying said solution to the wood cellulose, and

12 reacting said functional groups to form covalent bonds with other

13 functional groups of said solute and to said wood cellulose and wherein the acid catalyst is

14 produced by a pro-catalyst defined as a molecule producing an acid in the presence of wood

15 cellulose or water in wood cellulose.

16 (New Claim) 133. The process according to claim 132 further comprising the step of

17 maintaining said solute compound functional groups as monomers prior to applying said solution

18 to wood having wood cellulose.

19 (New Claim) 134. The process according to claim 133 further comprising the steps of

20 simultaneous reaction and diffusion of the functional groups in the wood and self-initiating

21 exothermic reaction of said functional groups to form covalent bonds with other functional

22 groups of said solute and to said wood cellulose.

23 (New Claim) 135. The process of claim 134 wherein the acid catalyst comprises a substance

1 which effects the exothermic reaction of the functional group so that the functional groups bonds
2 from the [trivalent], tetravalent atom across an oxygen of the cellulose hydroxyl group.

3 (New Claim) 136. The process of claim 135 wherein the acid catalyst is added to the wood
4 cellulose after application of said solution to the wood cellulose.

5 (New Claim) 137. The process of claim 135 wherein the acid catalyst is added to the solution
6 prior to application of the solution to the wood cellulose.

7 (New Claim) 138. The process of claim 132 wherein the acid catalyst is in the range of 0.05-
8 10% of the solution.

9 (New Claim) 139. The process of claim 138 wherein the acid catalyst is in the range of 0.05-
10 4.9% of the solution.

11 (New Claim) 140. The process of claim 132 wherein the acid catalyst has a pKa of 4 or less.

12 (New Claim) 141. The process of claim 140 wherein the acid catalyst has a pKa below 2.5

13 (New Claim) 142. The process of claim 132 wherein the acid catalyst is in the range of .01-
14 10% in situ the wood.

15 (New Claim) 143. The process of claim 132 wherein the pro-catalyst is a molecule
16 comprised of silicone and a halogen.

17 (New Claim) 144. The process of claim 132 wherein the concentration of non-hydrophilic
18 organic solvents is in the range from 0-20%.

19 (New Claim) 145. The process of claim 144 wherein the percentage of non-hydrophilic organic
20 solvents is in a range of 0 to 10%.

21 (New Claim) 146. The process of claim 132 wherein the hydrophilic organic solvent is at a
22 concentration of at least 10% of the solution.

23 (New Claim) 147. The process of claim 145 wherein hydrophilic organic solvents are at a

1 concentration of 30%-99.9% of the solution.

2 (New Claim) 148. The process of claim 132 wherein the solution is less than 20% oligomers of
3 the functional groups prior to applying the solution to the wood.

4 (New Claim) 149. The method of claim 132 wherein the organic solvent is an organic solvent
5 with a (K_{ow}) less than 10.0.

6 (New Claim) 150. The method of claim 149 wherein the organic solvent is an organic solvent
7 with a (K_{ow}) less than 1.0.

8 (New Claim) 151. The method of claim 150 wherein the organic solvent is an organic
9 solvent with a (K_{ow}) less than 0.

10 (New Claim) 152. The process of claim 132 further comprising the step of:

11 adding at least one non-reactive additive to the wood cellulose that enhances a
12 desired property selected from the group consisting of:

- 13 (1) fire resistance,
- 14 (2) insect resistance,
- 15 (3) moisture resistance,
- 16 (4) color,
- 17 (5) adhesion,
- 18 (6) insulation, and
- 19 (7) combinations thereof.

20 (New Claim) 153. The process of claim 152 wherein the step of adding at least one non-
21 reactive additive further comprises adding the additive to the solution.

22 (New Claim) 154. The process of claim 152 wherein the step of adding the at least one
23 non-reactive additive occurs before reacting the functional groups to bond with the wood

cellulose

(New Claim) 155. The process of claim 1525 wherein the additive is from the group

consisting of:

- 1) diatomaceous earth,
- 2) sodium silicates,
- 3) boron or silicon salts,
- 4) boric acid,
- 5) trimethyl (trialkyl) borate,
- 6) Boron Halides (BF₃, BCl₃, etc.),
- 7) Boric Anhydride (boron oxide),
- 8) phosphorous compounds,
- 9) copper compounds,
- 10) metal alkoxide,
- 11) meta-phosphoric acid;
- 12) a hydrophobic reagents,
- 13) phosphoric acid,
- 14) metaphosphoric acid, and
- 15) combinations thereof.

(New Claim) 156. The process according to claim 132, wherein the wood cellulose has an original weight and wherein the duration of treatment attains a weight of compound which is covalently bonded to the wood cellulose having a range of 0.1 to 10 weight percent of the original weight of the wood cellulose.